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14. ABSTRACT

This quarterly report describes the work done for the "Passive Imaging System for Measuring Atmospheric Scattering and CFLOS", under ONR Contract N00014-07-1-1060, between 1 February 2008 and 30 April 2008.

15. SUBJECT TERMS

Clouds, passive imaging, atmospheric scattering, cloud-free line of sight, CFLOS

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University of California, San Diego
JTO/ONR HEL MRI Quarterly Report April 2008

Project Title: Passive Imaging System for Measuring Atmospheric Scattering and CFLOS
Grant Number: N00014-07-1-1060

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1. **Activities for Current Quarter, Feb 08 – Apr 08**

Task 1: (Experimental test site)

The rebuild of the MSI imaging system, to add an environmental housing so that it can run outdoors, and to enable it to scan the horizon, was completed. Fabricated parts were received in early February, and the system was assembled, wired, and tested in February. The control software was modified as part of the test and debug stage, and completed. The instrument was installed at the site March 3. A few days later, we had a problem with the instrument window, and had to order a different type. The instrument was down for a few days days in March, to assess the problem and install the new window. Other than this, the instrument has been running continuously since 3 March. The site is inspected weekly.

Task 2: (Weather at test site)

The NPS team completed the development and preparation of their ground weather station. The weather station was installed February 13 and 14. In addition, the purchased Vaisala Point Scatter Meter software was integrated onto the MSI processing computer, and the system was deployed on March 3. The data acquisition and time of all systems has been coordinated.

Task 3: (Purchase IR system components)

This task was delayed pending receipt of funding for the second half of the year.

Task 4: (Data analysis)

Preliminary data analysis shows that most data are well onscale and appear to be of good quality. We detected a problem with the blue filter, and will have to order a replacement filter. Also, the signal is slightly noisier than normal, and the problem has been traced to the cable. These issues will be addressed in May.

Task 5: (Visibility algorithm)

(Tasks 6, 7, and 8 are not funded for year 1)

Task 8: (Research military needs)

2. **Events**

As a result of a communication error, the program manager was informed of the May JTO meeting on 22 April. The presentation was put together and submitted 24 April.

3. **Technical Results/Accomplishments**

Task 1: (Experimental test site)

The MSI has been deployed and is successfully running at the experimental test site.

Task 2: (Weather at test site)

The ground weather station and the Vaisala point scatter meter have been deployed and are running successfully.

Task 3: (Purchase IR system components)

Task 4: (Data analysis)

Initial data assessment indicates data are reasonable, with some issues to be addressed.

Task 5: (Visibility algorithm)

Tasks 6, 7, and 8 are not funded for year 1

Task 8: (Research military needs)

4. Issues

We requested the second half year funding in early February. Due to delays in the funding, we had to stop non-vital work at UCSD from 4 March through 24 April. NPS funding was received at the end of March, and the new UCSD funding was received 24 April.

5. Activities for Upcoming Quarter: (May 08 – Jul 08)

Task 1: (Experimental test site)

Although transmissometers were not included in the original proposal, the government plans to provide two for the project. The MIT team is planning to deploy them this quarter, and train the UCSD team on their care and handling. We will also continue ongoing monitoring of all systems, order a blue filter to replace the problem MSI filter, and address any other issues detected in the data analysis.

Task 2: (Weather at test site)

Ongoing monitoring of systems will continue. The NPS buoy is already deployed at no cost to this program; however it is slightly north of the site. NPS will evaluate whether it makes more sense to leave the buoy where it is or move it south in the second year as originally planned.

Task 3: (Purchase IR system components)

We plan to begin evaluating the best camera and lens to order for the Short Wave IR imaging system, with the goal of deploying the instrument in the second year.

Task 4: (Data analysis)

We will evaluate the field data, to determine whether flux levels are optimal, and whether general data quality is optimal.

Task 5: (Visibility algorithm)

Tasks 6, 7, and 8 are not funded for year 1

Task 8: (Research military needs)

6. Cost Report

The cost report will be sent by 10 May.

7. Milestone Status

The milestone for this year has been completed. Our original milestone was to have the experimental site fielded in January 2008. This milestone was moved to February after the start of the contract, because the funding was in place on 3 August, rather than 1 July. Although the instrument was ready at the end of February, it was actually deployed 3 March, because the delivery truck we had planned to use broke down.

8. Summary

The milestone for Year 1 has been accomplished, with the fielding of the experimental site. The instruments are working well. We plan to continue supporting the field site, and continue with data analysis and IR system design in the next quarter. We believe we have made good progress. We are on track for schedule, and slightly slow in funding, due to delays in receipt of the funds.